

# SEQUENCE LISTING

<110> Apicella, Michael A.  
Edwards, Jennifer L.

<120> Vaccine and compositions for the prevention and treatment of Neisserial infections

<130> 875.0096US1

<150> US 10/621,184

<151> 2003-07-15

<150> US 10/066,551

<151> 2002-01-31

<150> US 60/344,452

<151> 2001-10-23

<150> US 60/310,356

<151> 2001-08-06

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<170> FastSEQ for Windows Version 4.0

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<213> Neisseria gonorrhoeae

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<212> PRT

<213> Neisseria gonorrhoeae

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<212> DNA

<213> Neisseria gonorrhoeae

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<213> *Neisseria gonorrhoeae*

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<212> DNA

<213> *Neisseria gonorrhoeae*

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<211> 1578

<212> DNA

<213> *Neisseria gonorrhoeae*

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<211> 993

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<213> *Neisseria gonorrhoeae*

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 145 150 155 160  
 Ala Ser Lys Pro Ala Gly Glu His Val Phe Gln Val Asp Asn Phe Glu  
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 <212> DNA  
 <213> Neisseria gonorrhoeae 1291

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<212> PRT  
<213> Neisseria gonorrhoeae 1291

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65 70 75 80  
Asp Pro His Glu Ala Leu Ala Ala Arg Ala Ala Leu Ile Glu Ser Ala  
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115 120 125  
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130 135 140  
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145 150 155 160  
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165 170 175  
Phe Pro Arg Leu Asn Arg Arg Met His Asn Lys Ser Phe Thr Ala Asp  
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195 200 205

Lys Val Gly Glu Asp Thr Val Phe Ala Asp Leu Asp Ile Leu Ala Thr  
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 Gly Ser Val Val Gly Glu Val Ser His Asp Phe Asp Arg Tyr Trp Ala  
 225 230 235 240  
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 245 250 255  
 Gly Lys Gly Leu Gln Ala Leu Gly Tyr Asn Asp Glu Thr Ser Arg His  
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 305 310 315 320  
 Pro Ile Ala Gly Arg Leu Gln Asp Ala Leu Lys Gln Pro Glu Lys Ser  
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 Val Tyr Leu Val Ser Pro Tyr Phe Val Pro Thr Lys Ser Gly Thr Asp  
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 <213> Neisseria gonorrhoeae 1090

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 <211> 525  
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 <213> Neisseria gonorrhoeae 1090

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His Phe Asn Thr Ser Lys Pro Val Leu Leu Asp Asn Ile Leu Gln Ile
50 55 60
Arg His Thr Pro His Asn Asn Gly Leu Ser Asp Ile Tyr Leu Leu Asp
65 70 75 80
Asp Pro His Glu Ala Phe Ala Ala Arg Ala Leu Ile Glu Ser Ala
85 90 95
Glu His Ser Leu Asp Leu Gln Tyr Tyr Ile Trp Arg Asn Asp Ile Ser
100 105 110
Gly Arg Leu Leu Phe Asn Leu Met Tyr Leu Ala Ala Glu Arg Gly Val
115 120 125
Arg Val Arg Leu Leu Leu Asp Asp Asn Asn Thr Arg Gly Leu Asp Asp
130 135 140
Leu Leu Leu Ala Leu Asp Ser His Pro Asn Ile Glu Val Arg Leu Phe
145 150 155 160
Asn Pro Phe Val Leu Arg Lys Trp Arg Ala Leu Gly Tyr Leu Thr Asp
165 170 175
Phe Pro Arg Leu Asn Arg Arg Met His Asn Lys Ser Phe Thr Ala Asp
180 185 190
Asn Arg Ala Thr Ile Leu Gly Gly Arg Asn Ile Gly Asp Glu Tyr Phe
195 200 205
Lys Val Gly Glu Asp Thr Val Phe Ala Asp Leu Asp Ile Leu Ala Thr
210 215 220
Gly Ser Val Val Gly Glu Val Ser His Asp Phe Asp Arg Tyr Trp Ala
225 230 235 240
Ser His Ser Ala His Asn Ala Thr Arg Ile Ile Arg Ser Gly Asn Ile
245 250 255
Gly Lys Gly Leu Gln Ala Leu Gly Tyr Asn Asp Glu Thr Ser Arg His
260 265 270
Ala Leu Leu Arg Tyr Arg Glu Thr Val Glu Gln Ser Pro Leu Tyr Gln
275 280 285
Lys Ile Gln Thr Gly Arg Ile Asp Trp Gln Ser Val Gln Thr Arg Leu
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Ile Ser Asp Ser Pro Ala Lys Gly Leu Asp Arg Asp Arg Arg Lys Pro
305 310 315 320
Pro Ile Ala Gly Arg Leu Gln Asp Ala Leu Lys Gln Pro Glu Lys Ser
325 330 335

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Val Tyr Leu Val Ser Pro Tyr Phe Val Pro Thr Lys Ser Gly Thr Asp  
 340 345 350  
 Ala Leu Ala Lys Leu Val Gln Asp Gly Ile Asp Val Thr Val Leu Thr  
 355 360 365  
 Asn Ser Leu Gln Ala Thr Asp Val Ala Ala Val His Ser Gly Tyr Val  
 370 375 380  
 Lys Tyr Arg Lys Pro Leu Leu Lys Ala Gly Ile Lys Leu Tyr Glu Leu  
 385 390 395 400  
 Gln Pro Asn His Ala Val Pro Ala Thr Lys Asp Lys Gly Leu Thr Gly  
 405 410 415  
 Ser Ser Val Thr Ser Leu His Ala Lys Thr Phe Ile Val Asp Gly Lys  
 420 425 430  
 Arg Ile Phe Ile Gly Ser Phe Asn Leu Asp Pro Arg Ser Ala Arg Leu  
 435 440 445  
 Asn Thr Glu Met Gly Val Val Ile Glu Ser Pro Lys Ile Ala Glu Gln  
 450 455 460  
 Met Glu Arg Thr Leu Ala Asp Thr Thr Pro Glu Tyr Ala Tyr Arg Val  
 465 470 475 480  
 Thr Leu Asp Lys His Asn Arg Leu Gln Trp His Asp Pro Ala Thr Arg  
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 Lys Thr Tyr Pro Asn Glu Pro Glu Ala Lys Leu Trp Lys Arg Ile Ala  
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 <211> 1564  
 <212> DNA  
 <213> Neisseria gonorrhoeae ms11

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 catttggcgc aacgacattt ccggcaggct gctgttcaac ctcattgtacc ttgccgcaga 360  
 acgcgccgtg cgcgtacgcc tgctgttga cgacaacaac acgcgccggg tggacgatct 420  
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 acgcaaatgg cgcgcactcg gctacctgac cgacttcccc cgctcaacc gccgcatgca 540  
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 cagcgtcgtc cggcgaagta tcgcacgact tcgaccgcta ctgggcaagc cattccgccc 720  
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 <212> PRT  
 <213> Neisseria gonorrhoeae ms11

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 Ser Cys Ser Ser Trp Leu Pro Pro Leu Glu Glu Arg Thr Glu Ser Arg  
 35 40 45  
 His Phe Asn Thr Ser Lys Pro Val Leu Leu Asp Asn Ile Leu Gln Ile  
 50 55 60  
 Arg His Thr Pro His Asn Asn Gly Leu Ser Asp Ile Tyr Leu Leu Asp  
 65 70 75 80  
 Asp Pro His Glu Ala Phe Ala Ala Arg Ala Ala Leu Ile Glu Ser Ala  
 85 90 95  
 Glu His Ser Leu Asp Leu Gln Tyr Tyr Ile Trp Arg Asn Asp Ile Ser  
 100 105 110  
 Gly Arg Leu Leu Phe Asn Leu Met Tyr Leu Ala Ala Glu Arg Gly Val  
 115 120 125  
 Arg Val Arg Leu Leu Leu Asp Asp Asn Asn Thr Arg Gly Leu Asp Asp  
 130 135 140  
 Leu Leu Leu Ala Leu Asp Ser His Pro Asn Ile Glu Val Arg Leu Phe  
 145 150 155 160  
 Asn Pro Phe Val Leu Arg Lys Trp Arg Ala Leu Gly Tyr Leu Thr Asp  
 165 170 175  
 Phe Pro Arg Leu Asn Arg Arg Met His Asn Lys Ser Phe Thr Ala Asp  
 180 185 190  
 Asn Arg Ala Thr Ile Leu Gly Gly Arg Asn Ile Gly Asp Glu Tyr Phe  
 195 200 205  
 Lys Val Gly Glu Asp Thr Val Phe Ala Asp Leu Asp Ile Leu Ala Thr  
 210 215 220  
 Gly Ser Val Val Gly Glu Val Ser His Asp Phe Asp Arg Tyr Trp Ala  
 225 230 235 240  
 Ser His Ser Ala His Asn Ala Thr Arg Ile Ile Arg Ser Gly Asn Ile  
 245 250 255  
 Gly Lys Gly Leu Gln Ala Leu Gly Tyr Asn Asp Glu Thr Ser Arg His  
 260 265 270  
 Ala Leu Leu Arg Tyr Arg Glu Thr Val Glu Gln Ser Pro Phe Tyr Gln  
 275 280 285  
 Lys Ile Gln Thr Gly Arg Ile Asp Trp Gln Ser Val Gln Thr Arg Leu  
 290 295 300  
 Ile Ser Asp Ser Pro Ala Lys Gly Leu Asp Arg Asp Arg Arg Lys Pro  
 305 310 315 320  
 Pro Ile Ala Gly Arg Leu Gln Asp Ala Leu Lys Gln Pro Glu Lys Ser  
 325 330 335  
 Val Tyr Leu Val Ser Pro Tyr Phe Val Pro Thr Lys Ser Gly Thr Asp  
 340 345 350  
 Ala Leu Ala Lys Leu Val Gln Asp Gly Ile Asp Val Thr Val Leu Thr  
 355 360 365  
 Asn Ser Leu Gln Ala Thr Asp Val Ala Ala Val His Ser Gly Tyr Val  
 370 375 380  
 Lys Tyr Arg Lys Pro Leu Leu Lys Ala Gly Ile Lys Leu Tyr Glu Leu  
 385 390 395 400  
 Gln Pro Asn His Ala Val Pro Ala Thr Lys Asp Lys Gly Leu Thr Gly  
 405 410 415  
 Ser Ser Val Thr Ser Leu His Ala Lys Thr Phe Ile Val Asp Gly Lys  
 420 425 430  
 Arg Ile Phe Ile Gly Ser Phe Asn Leu Asp Pro Arg Ser Ala Arg Leu  
 435 440 445

Asn Thr Glu Met Gly Val Val Ile Glu Ser Pro Lys Ile Ala Glu Gln  
 450 455 460  
 Met Glu Arg Thr Leu Ala Asp Thr Thr Pro Glu Tyr Ala Tyr Arg Val  
 465 470 475 480  
 Thr Leu Asp Lys His Asn Arg Leu Gln Trp His Asp Pro Ala Thr Arg  
 485 490 495  
 Lys Thr Tyr Pro Asn Glu Pro Glu Ala Lys Leu Trp Lys Arg Ile Ala  
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<210> 19  
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 <212> DNA  
 <213> Neisseria meningitidis B

<220>  
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 <223> n = a or t or g or c.

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 ggaaagccgt cattttcaata cttccaaacc cgtccgcctg gacaacatcc tgcaaaccg 180  
 gcacacccct cataccaacg ggctatccga tatctatctg ttgaacgacc cccacgaagc 240  
 ctttgccgcc cgcgcgcgcc ttatcgaatc tgccgaacac agcctcgatt tgcaatacta 300  
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 tgccgtcccc gccacaaaag acaaaggcct gaccggcagc tccgtaacca gcctgcacgc 1260  
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 gatggagcgc acccttgccg ataccacacc cgaatacgcc taccgcgtta ccctcggcag 1440  
 gcacaaccgc ctgcaatggc acgatcccgc caccgaaaa acctaccgga acgaaccgga 1500  
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 <212> PRT  
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 Ser Cys Ser Ser Trp Leu Pro Pro Leu Glu Glu Arg Thr Glu Ser Arg  
 35 40 45

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65					70					75					80
Asp	Pro	His	Glu	Ala	Phe	Ala	Ala	Arg	Ala	Ala	Leu	Ile	Glu	Ser	Ala
				85					90					95	
Glu	His	Ser	Leu	Asp	Leu	Gln	Tyr	Tyr	Ile	Trp	Arg	Asn	Asp	Ile	Ser
			100					105					110		
Gly	Arg	Leu	Leu	Phe	Asn	Leu	Val	Tyr	Leu	Ala	Ala	Glu	Arg	Gly	Val
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Arg	Val	Arg	Leu	Leu	Leu	Asp	Asp	Asn	Asn	Thr	Arg	Gly	Leu	Asp	Asp
						135					140				
Leu	Leu	Leu	Ala	Leu	Asp	Ser	His	Pro	Asn	Ile	Glu	Val	Arg	Leu	Phe
145					150					155					160
Asn	Pro	Phe	Val	Leu	Arg	Lys	Trp	Arg	Ala	Leu	Gly	Tyr	Leu	Thr	Asp
				165					170					175	
Phe	Pro	Arg	Leu	Asn	Arg	Arg	Met	His	Asn	Lys	Ser	Phe	Thr	Ala	Asp
				180				185					190		
Asn	Arg	Ala	Thr	Ile	Leu	Gly	Gly	Arg	Asn	Ile	Gly	Asp	Glu	Tyr	Phe
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Lys	Val	Gly	Glu	Asp	Thr	Val	Phe	Ala	Asp	Leu	Asp	Ile	Leu	Ala	Thr
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Gly	Ser	Val	Val	Gly	Glu	Val	Ser	His	Asp	Phe	Asp	Arg	Tyr	Trp	Ala
225					230					235					240
Ser	His	Ser	Ala	His	Asn	Ala	Thr	Arg	Ile	Ile	Arg	Ser	Gly	Asn	Ile
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Gly	Lys	Gly	Leu	Gln	Ala	Leu	Gly	Tyr	Asn	Asp	Glu	Thr	Ser	Arg	His
			260					265					270		
Ala	Leu	Leu	Arg	Tyr	Arg	Glu	Thr	Val	Glu	Gln	Ser	Pro	Leu	Tyr	Gln
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Lys	Ile	Gln	Thr	Gly	Arg	Ile	Asp	Trp	Gln	Ser	Val	Gln	Thr	Arg	Leu
						295					300				
Ile	Ser	Asp	Asp	Pro	Ala	Lys	Gly	Leu	Asp	Arg	Asp	Arg	Arg	Lys	Pro
305					310					315					320
Pro	Ile	Ala	Gly	Arg	Leu	Gln	Asp	Ala	Leu	Lys	Gln	Pro	Glu	Lys	Ser
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Val	Tyr	Leu	Val	Ser	Pro	Tyr	Phe	Val	Pro	Thr	Lys	Ser	Gly	Thr	Asp
			340					345					350		
Ala	Leu	Ala	Lys	Leu	Val	Gln	Asp	Gly	Ile	Asp	Val	Thr	Val	Leu	Thr
			355				360					365			
Asn	Ser	Leu	Gln	Ala	Thr	Asp	Val	Ala	Ala	Val	His	Ser	Gly	Tyr	Val
						375					380				
Lys	Tyr	Arg	Lys	Pro	Leu	Leu	Lys	Ala	Gly	Ile	Lys	Leu	Tyr	Glu	Leu
385					390					395					400
Gln	Pro	Asn	His	Ala	Val	Pro	Ala	Thr	Lys	Asp	Lys	Gly	Leu	Thr	Gly
				405					410					415	
Ser	Ser	Val	Thr	Ser	Leu	His	Ala	Lys	Thr	Phe	Ile	Val	Asp	Gly	Lys
			420					425					430		
Arg	Ile	Phe	Ile	Gly	Ser	Phe	Asn	Leu	Asp	Pro	Arg	Ser	Ala	Arg	Leu
			435				440					445			
Asn	Thr	Glu	Met	Gly	Val	Val	Ile	Glu	Ser	Pro	Lys	Ile	Ala	Glu	Gln
						455					460				
Met	Glu	Arg	Thr	Leu	Ala	Asp	Thr	Ser	Pro	Glu	Tyr	Ala	Tyr	Arg	Val
465					470					475					480
Thr	Leu	Asp	Arg	His	Asn	Arg	Leu	Gln	Trp	His	Asp	Pro	Ala	Thr	Arg
				485					490					495	
Lys	Thr	Tyr	Pro	Asn	Glu	Pro	Glu	Ala	Lys	Leu	Trp	Lys	Arg	Ile	Ala
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 <213> *Neisseria gonorrhoeae*  
  
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 <213> *Neisseria gonorrhoeae*  
  
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cacaaccgcc	tgcaatggca	cgatcccgcc	acccgaaaaa	cctaccgcaa	cgaaccgcaa	1500
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tta						1563

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 <212> DNA  
 <213> *Neisseria gonorrhoeae*

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